UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/657,532	09/08/2000	Jose Olav Andrade	P2443-559	1655

21839 7590 07/30/2004

BURNS DOANE SWECKER & MATHIS L L P
POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER	
CHEN, PO WEI	
ART UNIT	**PAPER NUMBER**
2676	16

DATE MAILED: 07/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/657,532	ANDRADE ET AL.	
	Examiner	Art Unit	
	Po-Wei (Dennis) Chen	2676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *May 17, 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-53* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-53* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

In response to an Amendment received on May 17, 2004. This action is non-final.

Claims 1-53 are pending in this application. Claims 1, 15, 29 and 40 are independent claims.

The present title of the invention is "Method and Apparatus for Correcting Pixel Level Intensity Variation".

The Group Art Unit of the Examiner case is now 2676. Please use the proper Art Unit number to help us serve you better.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 9, 15-16, 23, 29-30, 37, 40-41 and 48 are rejected under 35 U.S.C. 102(b) as being anticipated by Hawthorne et al. (US 5,764,209; refer to as Hawthorne herein).

3. Regarding claim 1, Hawthorne discloses a flat panel display inspection system comprising:

A method for providing a consistent visual appearance of one or more pixels of a display screen with respect to a viewing position by compensating for variations between one or more perceived pixel level values associated with the one or more pixels and one or more corresponding pixel level values associated with the one or more pixels, the variations associated with one or more viewing angles between one or more locations of the one or more pixels and the viewing position (lines 15-21 and 58-67 of column 2 and lines 1-11 of column 3);

Establishing the viewing position based on one or more received user inputs (lines 41-47 of column 4, lines 45-52 of column 6 and lines 19-35 of column 12 and Fig. 1-2 and 8; the camera which maybe human eye can be adjusted by user to establish the viewing position);

Applying a respective different correction factor to each of the one or more corresponding pixel level values, the respective different correction factor being based on a respective viewing angle formed between a specific location on the display screen of the one or more pixels and the viewing position (line 58 of column 2 to line 11 of column 3 and line 35 of column 8 to line 35 of column 9).

4. Regarding claim 2, Hawthorne discloses a flat panel display inspection system comprising:

Step of applying the respective different correction factor further includes establishing one or more different nonlinear correction curves corresponding to the one or more locations, the different non-linear correction curves relating a range of pixel level values to a corresponding range of corrected pixel level values associated with the viewing position (line 58 of column 2 to line 11 of column 3, line 26-34 of column 9 and lines 45-63 of column 12; it is noted that a polar plot of brightness versus viewing angle is generated for each corresponding pixel. Brightness corresponds to pixel level and polar plot corresponds to non-linear correction curves).

5. Regarding claim 9, Hawthorne discloses a flat panel display inspection system comprising:

Applying an analytical function to generate the different correction factor (line 58 of column 2 to line 11 of column 3 and line 35 of column 8 to line 35 of column 9; different pixels are being individually analyzed to generate compensation factor (correction factor) accordingly).

6. Regarding claims 15-16, 23, 29-30, 37, 40-41 and 48, the statement presented, above, with respect to claims 1-2 and 9 are incorporated herein.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 3-4, 7, 17-18, 21, 31-32, 35, 42-43 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hawthorne et al. (US 5,764,209; refer to as Hawthorne herein) as applied to claims 1, 15, 29 and 40, above, and further in view of Shirriff (US 6,094,185).

9. Regarding claims 3-4, Hawthorne discloses a flat panel display inspection system comprising:

Establishing the viewing position and one or more non-linear correction curves for each of the one or more locations relative to the established viewing position based on the one or more received user inputs (line 58 of column 2 to line 11 of column 3, lines 41-47 of column 4, lines 45-52 of column 6, line 35 of column 8 to line 35 of column 9 and lines 19-35 of column 12 and Fig. 1-2 and 8; the camera which corresponds to human eye can be adjusted by user to establish the viewing position).

Hawthorne does not disclose displaying a calibration pattern on the display screen; receiving one or more user inputs associated with the one or more locations responsive to the display of the calibration pattern; storing the received one or more user inputs with an association to a user identity and processing a user input to obtain the user identity and the one or more stored user inputs associated therewith. Shirriff discloses an apparatus and method for automatically adjusting computer display parameters in response to ambient light and user preferences utilizing the method (lines 1-3 of abstract, lines 20-27 and 40-49 of column 4 and lines 1-7 of column 6 and Fig. 2 and 5; Fig. 5 corresponds to a calibration pattern and different entries of user preference values are used to identify different users).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to utilize the teachings of displaying a calibration pattern on the display screen, receiving one or more user inputs associated with the one or more locations responsive to the display of the calibration pattern, and establishing based on user inputs by Shirriff to provide the advantage of accommodating each user's computer display preferences and providing a user with a great deal of control over computer images to accurately reflects the appearance of the image (lines 33-34 of column 1 and lines 3-9 of column 4, Shirriff).

10. Regarding claim 7, Hawthorne does not disclose determining if the viewing position and a location of the each corresponds to a first reference location; and interpolating using the first reference location and a second reference location to arrive at an interpolated correction factor if the determined location of the each does not correspond to the first reference location. However, it would have been obvious at the time the invention was made to one of ordinary skill in the art to utilize the teachings of "A determination is then made as to whether the light sensor signal can

be directly matched into a user preference table....If the light signal does not result in direct table entry match into the user preference table, then the two closest preference table entries are identified (block 66)...The next step associated with the operations of FIG. 3 is to interpolate a user preference value (block 68) between these table entries (see lines 36-67 of column 4 and lines 1-18 of column 5 and Fig. 3) by Shirriff to provide "an image appearing on the computer display 24 accurately reflects the appearance of the image when it is printed on paper" (see lines 7-9 of column 4, Shirriff; It is further noted that while the claim recites the references locations corresponding to viewing position or the changed relative orientation, to one of ordinary skill in the art it would have been obvious at the time of invention to understand by considering viewing position or the changed relative orientation as user preference values, and the method of interpolation to provide a better light intensity value (Fig. 5) for the advantage above).

11. Regarding claims 17-18, 21, 31-32, 35, 42-43 and 46, the statement presented above, with respect to claims 3-4 and 7 are incorporated herein.

12. Claims 5-6, 10-11, 19-20, 24-25, 33-34, 38-39, 44-45 and 49-50, are rejected under 35 U.S.C. 103(a) as being unpatentable over Hawthorne et al. (US 5,764,209; refer to as Hawthorne herein) as applied to claims 1, 15, 29 and 40, above, and further in view of Tomita (US 4,788,588).

13. Regarding claims 5-6 and 10, Hawthorne does not disclose detecting a change in a relative orientation between a display orientation and the viewing position; applying a second respective correction factor to each of the one or more corresponding pixel level values based on the detected change in the relative orientation; establishing one or more second different non-linear correction curves corresponding to one or more relative orientations between the

display orientation and the viewing position, the second different non-linear correction curves relating the range of pixel level values to a second corresponding range of corrected pixel level values associated with the one or more relative orientations; applying an analytical function to generate the correction factor. Tomita discloses a liquid crystal display device utilizing the method (lines 45-62 of column 1 and line 41 of column 2 to line 47 of column 3 and Fig. 4; it is noted that when the viewing angle is changed, the automatic correction is perform by determining the viewing angle and applying corresponding voltage (pixel level) to the display (pixels) according to the non-linear curves in Fig. 4. Thus, in the example, the correction voltage level of 0 and 20 degree of visual angles corresponds to first and second correction factors respectively).

It would have been obvious to one of ordinary skill in the art at the time of invention to utilize the teaching of Tomita to provide a good image quality on liquid crystal display regardless the viewing angle by maintaining the brightness or contrast level of the display (lines 41-56 of column 1, Tomita).

14. Regarding claim 11, Hawthorne does not discloses reading one or more sensors indicating one or more of: display orientation and viewing position. Tomita disclose a liquid crystal display apparatus utilizing the method (lines 45-47 of column 1).

It would have been obvious to one of ordinary skill in the art at the time of invention to utilize the teaching of Tomita to provide a good image quality on liquid crystal display regardless the viewing angle by maintaining the brightness or contrast level of the display (lines 41-56 of column 1, Tomita).

15. Regarding claims 19-20, 24-25, 33-34, 38-39, 44-45 and 49-50, the statement presented above, with respect to claims 5-6 and 10-11 are incorporated herein.

16. Claims 8, 22, 36 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hawthorne et al. (US 5,764,209; refer to as Hawthorne herein) as applied to claims 1, 15, 29 and 40, above, and further in view of Tomita (US 4,788,588) and Shirriff (US 6,094,185).

17. Regarding claims 8, 22, 36 and 47, statements presented above, with respect to claim 7 are incorporated herein.

18. Claims 12-14, 26-28 and 51-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hawthorne et al. (US 5,764,209; refer to as Hawthorne herein) as applied to claims 1, 15 and 40 above, and further in view of Tomita (US 4,788,588) and Lanier (US 6,400,374).

19. Regarding claims 12-14, Hawthorne does not disclose one or more sensors include one or more of: a display orientation sensor, a viewing position sensor. Tomita discloses a liquid crystal display apparatus utilizing the devices (lines 45-62 of column 1). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize the teaching of Tomita to provide a good image quality on liquid crystal display regardless the viewing angle by maintaining the brightness or contrast level of the display (lines 41-56 of column 1, Tomita).

The combination of Hawthorne and Tomita does not disclose a sensor for sensing the position of a remote device coupled to the viewer, a viewer feature tracking sensor and a camera for generating an image associated with a viewer, and a means for analyzing the image to track one or more features associated with the viewer; a viewer feature tracking sensor and a camera for generating an image associated with a viewer and a means for analyzing the image to track one or more features associated with the viewer. Lanier discloses a video superposition system

and method utilizing the device and method (lines 1-11 of abstract, lines 3-7 of column 8 and elements 6, 8, 10 and 22' of Fig. 1; It is noted that the sensor is coupled to the viewer in Fig. 1 and the mask region can be considered as a feature extracted associated with the viewer, or the human subject that Lanier discloses). It would have been obvious to one of ordinary skill in the art at the time of invention to utilize the teaching of Lanier to provide a flexible way to determine a position and orientation of an object (abstract, Lanier).

20. Regarding claims 26-28 and 51-53, the statements presented above, with respect to claims 12-14 are incorporated herein.

Response to Arguments

21. Applicant's arguments with respect to claims 1, 15, 29 and 40 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kaneko et al. (US 6,323,847) disclose a method of correcting view-angle-dependent characteristics of display device.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Po-Wei (Dennis) Chen whose telephone number is (703) 305-8365. The examiner can normally be reached on 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew C Bella can be reached on (703) 308-6829. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Po-Wei (Dennis) Chen
Examiner
Art Unit 2697

Po-Wei Dennis Chen
July 21, 2004

MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600